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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,235	11/07/2001	Jennifer L. Lee	55393US011	1507

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EXAMINER	
BERMAN, SUSAN W	

ART UNIT	PAPER NUMBER
1711	

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/008,235	LEE ET AL.	
	Examiner	Art Unit	
	Susan W. Berman	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-27,64-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *70,71 and 77* is/are allowed.

6)☒ Claim(s) *8-25,64-69 and 72-76* is/are rejected.

7)☒ Claim(s) *26 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 72-75 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 72: the examiner has not found any mention in the disclosure as originally filed that the reactive diluent should be "substantially free" of trifunctional monomer. Claim 73: the examiner has not found any mention in the disclosure as originally filed that the reactive diluent should be "substantially free" of alkoxylated, radiation curable monomer comprising main-chain alkoxylated functionality. Applicant discloses "less than 10 weight percent" of alkoxylated, radiation curable monomer comprising main-chain alkoxylated functionality. Claims 74 and 75: what is disclosed is that the "oligo/resin" can be a di(meth)acrylate of an aliphatic urethane (see paragraphs [0044] and [0108]).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 65, 67 and 72-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. With respect to claims 67 and 72, the phrase "substantially free" fails to recite a meaningful amount of "trifunctional monomer having a plurality of radiation curable moieties" that must be absent to obtain a composition "substantially free" of the recited component. Furthermore, the component intended to be limited is not clearly defined because the kinds of functional groups and the kinds of radiation curable moieties are not defined. It is noted that "radiation curable moieties" are considered to be "functional groups" since they have a clear function. However, "functional groups" are not limited to "radiation curable moieties". With respect to claims 65 and 73, it is not clear what amount of alkoxylated, radiation curable monomer comprising main-chain alkoxylated functionality would be considered to be a "substantial amount, therefore it is not clear what is meant by "substantially free". Furthermore, it is not clear whether "substantially free" further limits the recitation in claim 70 that the composition comprises "less than 10 weight percent" of the main-chain alkoxylated monomer. Claims 74 and 75 fail to clearly set forth what kind or kinds of "di-functional moiety" is/are intended to be present.

Response to Arguments

Applicant's arguments filed 08/14/2006 have been fully considered but they are not persuasive.

Applicant argues that WO '787 does not teach compositions comprising less than 10 weight percent of an alkoxylated monomer comprising main-chain alkoxylated functionality. This argument is not persuasive for the following reasons. WO '787 discloses using 10-30 weight percent tri- or higher functional main-chain alkoxylated acrylate monomers. WO '787

thus discloses compositions comprising 10 weight percent or less than 10 weight percent (the disclosed weight range of 10-30% encompasses 9-31% when significant figures are taken into consideration and thus overlaps the instantly claimed "less than 10 weight percent"). The reference also teaches that it is preferable to choose compounds having a low viscosity so that amounts toward the upper end of the weight range can be used. Therefore, it is within the disclosure of WO '787 to employ an amount near 10 wt. % when employing higher viscosity alkoxylated monomers because WO '787 teaches that the amount of monomer employed is dependent on the viscosity of the selected monomer. The disclosure is not limited to the examples wherein low viscosity main-chain alkoxylated acrylate monomers in a greater weight percent are employed.

Applicant further argues that WO '787 teaches that using less than 10 weight percent tri- or higher functional material affects that hardness and scratch resistance of the inks. This argument is not persuasive for the following reasons. WO '787 includes all tri-functional material, including tri- or higher functional oligomer, within this teaching; thus one skilled in the art at the time of the instant invention is taught that mixtures of tri-functional main-chain alkoxylated acrylates and tri- or higher-functionality oligomers can be employed to provide 10 weight percent or more and the desired hardness and scratch resistance. With respect to the recitation "substantially free" of alkoxylated acrylates, as discussed in the rejection under 35 USC 112, the phrase "substantially free" is a relative term that can be considered to include amounts greater than 10 weight percent. With respect to applicant's argument concerning the recitation "substantially free of trifunctional monomer having a plurality of radiation curable moieties" see the rejections under 35 USC 112, paragraphs 1 and 2 set forth herein.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 8-25, 64-68 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/299787. WO '787 discloses radiation curable ink jet ink compositions having a viscosity no greater than 35 mPa.s at 30 ^{0} C. WO '787 teaches compositions comprising a photoinitiator and oligomers such as polyester-, urethane- and epoxy-acrylates. A reactive liquid material comprising mono- and di- functional acrylates is taught. Preferred monofunctional acrylates, used in amounts from 20 to 60 wt. %, are tetrahydrofurfuryl acrylate and isobornyl acrylate and acrylates of alkoxylated alcohols, e.g. 2-(2-ethoxyethoxy)ethyl acrylate or vinyl monomers such as N-vinyl 2-pyrrolidone (pages 9-10 and 15). Difunctional acrylates having the required low viscosity, preferably at least 5 wt. %, include hexanediol diacrylates and propoxylated neopentyl glycol diacrylate, etc (pages 10-11and 16). Tri-functional acrylates specifically taught are main-chain alkoxylated acrylates in amounts from 10-30 wt % (pages 11 and 16). The examples in Tables 1-3 disclose compositions comprising about 40% isobornyl acrylate and 10% trimethylpropane ethoxylate triacrylate monomer with a urethane acrylate prepolymer and a photoinitiator.

The instant claims now require that the composition comprises less than 10 weight percent of an alkoxylated, radiation curable monomer comprising main-chain alkoxylated functionality. WO '787 teaches including tri-functional alkoxylated acrylates in amounts from 10-30 wt % and that it is preferable to choose compounds having a low viscosity so that

amounts toward the upper end of the weight range can be used. However, It would have been obvious to one skilled in the art at the time of the invention to provide compositions as disclosed by WO '787 comprising 10 weight percent or less than 10 weight percent (the disclosed weight range of 10-30% encompasses 9-31% when significant figures are taken into consideration and thus overlaps the instantly claimed "less than 10 weight percent"). One of ordinary skill in the art at the time of the invention would have been motivated to employ an amount near 10 wt. % when employing higher viscosity alkoxylated monomers because WO '787 teaches that the amount of monomer employed is dependent on the viscosity of the selected monomer .

Another difference between the disclosed compositions and the instantly claimed compositions is that applicant requires that the reactive diluent include a high Tg component and 0.1 to 50 wt % adhesion promoting component comprising a heterocyclic radiation curable monomer or a monomer containing a pendent alkoxylated moiety. However, WO '787 teaches preferably including tetrahydrofurfuryl acrylate and/or acrylates of alkoxylated alcohols, e.g. 2-(2-ethoxyethoxy)ethyl, as the acrylate monofunctional acrylate. Thus, It would have been obvious to one skilled in the art at the time of the invention to employ mixtures of mono-functional acrylates and mixtures of multifunctional acrylates in the reactive diluent mixture taught by WO '787. It would further have been obvious to one skilled in the art at the time of the invention to select isobornyl acrylate, as taught by WO '787, thus providing applicant's high Tg component. It would further have been obvious to one skilled in the art at the time of the invention to employ tetrahydrofurfuryl acrylate and/or 2-(2-ethoxyethoxy)ethyl acrylate as monofunctional monomers in the disclosed compositions, thus providing applicant's adhesion promoting component, as taught by WO '787. WO '787 provides motivation to employ a

mixture of monofunctional monomers in amounts from 20-60 wt% of reactive material in the ink and to select isobornyl acrylate and/or tetrahydrofurfuryl acrylate as the monofunctional material by teaching that these cyclic acrylates are "more preferred" (page 9, last paragraph). Motivation is provided to select isobornyl acrylate by the teaching of WO '787 that isobornyl acrylate is a preferred monofunctional monomer and by the use of isobornyl acrylate in the examples. Motivation to include tetrahydrofurfuryl acrylate is provided by the teaching of WO '787 that this is a preferred monomer. Motivation to select 2-(2-ethoxyethoxy)ethyl acrylate is provided by naming it as the example of an acrylate of alkoxylated alcohols to be used as monofunctional acrylate (page 10, first 5 lines). One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing useful ink jet ink compositions by the teaching of WO '787 that these monomers are preferred and provide the required viscosity for ink jet ink printing, in the absence of a showing of unexpected results therefrom.

With respect to claim 14, It would have been obvious to one skilled in the art at the time of the invention to determine the weight percents of specfic monomers required to obtain the desired viscosity and other properties from the teachings of WO '787. With respect to claim 23, It would have been obvious to one skilled in the art at the time of the invention to employ N-vinylcaprolactam as the monofunctional vinyl monomer because it is analogous to the disclosed N-vinylpyrrolidone taught by WO '787. With respect to claim 24, It would have been obvious to one skilled in the art at the time of the invention to employ propoxyethyl (meth)acrylate as a monofunctional monomer in the reactive diluent because WO '787 teaches using and acrylate monomer of an alkoxylated alcohol. With respect to claim 25, It would have been obvious to one skilled in the art at the time of the invention to employ diacrylate of neopentyl glycol in the

reactive diluent because WO '787 teaches that this monomer has a suitable low viscosity. With respect to claim 64, WO '787 teaches compositions having a viscosity less than 35 mPa.s, thus encompassing a viscosity of "up to 50 cp at 25^0 C, as set forth in claim 64.

With respect to claims 26 and 27, It would have been obvious to one skilled in the art at the time of the invention to employ both employ tetrahydrofurfuryl acrylate and 2-(2-ethoxyethoxy)ethyl acrylate as monofunctional monomers in the disclosed compositions and to determine the amounts of each required to obtain the desired properties. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing a radiation curable ink jet ink free of non-reactive diluent and having the desired viscosity, surface tension, volatility, stability and drying rate, as taught by WO '787, because WO '787 specifically teaches the monofunctional and difunctional materials set forth in the instant claims.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8-25, 64, 65, 67 and 76 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,534,128. Although the conflicting claims are not identical, they are not patentably distinct from each other because the components of the compositions meeting the definitions set forth in the claims of US '128 and the instant application can be the same components although the definitions in the claims are not identical. The aliphatic urethane acrylate oligomers set forth in the claims of US '128 correspond to the oligo/resin set forth in the instant claims. The radiation curable reactive diluent set forth in the claims of US '128 considered in view of the disclosure of components providing the reactive diluent comprises the instantly claimed reactive diluent because the same components as disclosed are set forth in the instant claims.

Claims 8-25, 64, 65, 67 and 76 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,558,753. Although the conflicting claims are not identical, they are not patentably distinct from each other because the components of the compositions meeting the definitions set forth in the claims of US '753 and the instant application can be the same components although the definitions are not identical. The oligo/resin is set forth in the claims of US '753 and in the instant claims. The radiation curable reactive diluent set forth in the claims of US '753 considered in view of the disclosure of components providing the reactive diluent comprises the instantly claimed reactive diluent because the same components as disclosed are set forth in the instant claims.

Allowable Subject Matter

Claims 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 70, 71 and 77 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: WO '787, the closest prior art of record, does not teach or suggest the specified combination of monomers set forth in claims 26 and 70 and/or the combination of the recited monomers in the weight percents set forth in claims 27 and 71.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W. Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB
10/17/06

Susan W Berman
Primary Examiner
Art Unit 1711